Approval Number: Not Assigned **NOC ID: 512**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) PRETREATMENT PLANT

Emission Unit Name: PT-S3 **Emission Unit ID** 534

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Caustic Scrubber	1	One in operation
	HEME	3	Two in operation and one in stand-by.
	Heater	2	One heater in operation and one in stand-by.
	HEPA	2	Two stages of HEPA filtration. A total of three banks of primary HEPAs one in operation and two in standby. Each bank contains two filters. A total three banks of secondary HEPAs one in operation and two in standby. Each bank contains two filters
	Exhaust Fan	2	One in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4).	Am-241, Co-60, Cm-244, Cs-137, C-14, I-129, Np-237, Sm-151, Sr-90, Tc-99, U-234, Ru-106, and Cs-137	Continuous

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the receipt of waste from the Double Shell Tank system for the separation and preparation of the Low-Activity Waste and High-Level Waste feeds for vitrification. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit PT-S3 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a Caustic Scrubber, High Efficiency Mist Eliminators (HEMEs), a Heater, two stages of High-Efficiency Particulate Air (HEPA) filtration in series, and Exhaust Fans. Control technologies for operation of the emission unit that are not regulated by this license (located between the HEPA and Exhaust Fans) are a Thermal Oxidizer, an Aftercooler, a Carbon Bed Adsorber, and a Moderate Efficiency Filter (MOD).

The maximum differential pressure across each filter HEPA bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

The inlet airstream temperatures for each HEPA filter bank shall be measured by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The temperature differential shall be controlled to ensure Relative Humidity (RH) is within acceptable limits. The moisture content of the inlet airstream for each HEPA filter bank shall be measured by a capacitive moisture sensor that is specified to be tolerant of particulate contamination and most chemicals. The dewpoint of offgas air flow shall be measured and subsequently controlled by temperature to ensure that the air stream is above its dewpoint in order to prevent condensation in offgas treatment equipment such as HEPA filters. The various component selections for moisture sensor instruments shall be based on factors that include range, accuracy, offgas stream constituents, and radiation levels.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

[WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-040(5); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted. Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit

subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)]

The approved activities are limited to:

The following activities within the C5 areas are ventilated by the PT-S3 emission unit:

-Waste Feed Receipt System (C5): the waste feed receipt system shall be located within C5 areas and shall receive tank waste from the DST system and recycle streams from pretreatment waste processing. The waste feed receipt system shall provide access for waste sampling, shall provide lag storage for the waste, and shall transfer the waste feed to other systems within the pretreatment plant.

-Waste Feed Evaporation System (C5; Condensate Tanks C3): The waste feed evaporation system shall include two evaporator trains arranged in parallel but capable of independent operation. The waste feed evaporators shall incorporate forced-circulation units operating under vacuum to reduce the operating temperature of the waste stream. Each evaporator feed vessel shall incorporate a pulse jet agitation system to provide mixing and to prevent settling of solids. The waste feed from the feed vessels shall be pumped continuously to the evaporator.

The re-circulation pump shall maintain a high flow rate within the evaporation system. The re-circulation pump shall transfer the waste through the reboiler and back into the separator vessel. The re-circulating waste stream shall be prevented from boiling in the reboiler tubes by maintaining sufficient hydrostatic head to increase the boiling point above the temperature of the liquor in the reboiler.

As the liquid travels through the reboiler, the hydrostatic head shall diminish and flash evaporation shall occur as the flow enters the separator vessel. The liquid shall continue to flash to equilibrium, and the vapor and liquid streams shall be separated. The liquid stream shall be circulated in this loop and become more concentrated. The concentrated waste stream shall be pumped out of the evaporator system to the ultrafiltration process system.

The waste feed evaporators shall be operated at 50 oC (122 oF). The waste feed evaporators shall concentrate dissolved solids to a concentration in the range of 8 to 10 molar.

-Ultrafiltration System (C5): The ultrafiltration system shall separate the evaporator effluent into a solids waste stream (the HLW feed stream) and the liquid permeate (LAW feed stream). The ultrafiltration system shall receive waste feed in batch modes. Chemicals shall be added to the waste mixture and heated and agitated to complex the transuranic elements and strontium. The heating temperature shall be less than 80 oC (176 oF), and vaporization of radionuclides shall be prevented.

The waste stream shall be fed to the ultrafilters. The liquids (permeate) shall pass through the permeable ultrafilter surface while the solids are retained. The ultrafiltration permeate, designated as the LAW feed stream, shall be further treated within the pretreatment plant prior to treatment through the LAW vitrification systems. The concentrated solids stream, designated as HLW feed, shall be stored at the pretreatment plant and blended with other HLW feed streams. This mixture shall ultimately be processed through the HLW vitrification systems.

Periodic cleaning of the ultrafilters shall be accomplished by back-flushing with filter permeate and chemical cleaning agents. Ventilation offgas from the permeate collection vessels shall be controlled by the process vessel ventilation system.

-HLW Lag Storage and Blending System (C5): The HLW lag storage and blending system shall receive the HLW feed stream from the ultrafiltration system, provide lag storage for the high solids slurry, blend the HLW vitrification feed prior to processing in the HLW vitrification plant, and blend cesium and technetium concentrates from the LAW treatment process into the HLW feed stream prior to transfer to the HLW vitrification plant.

-Cesium Ion Exchange System (C5): The cesium ion exchange system shall remove cesium from the LAW feed stream with a series of four ion exchange columns which shall be rotated and finally eluted with dilute nitric acid to remove the cesium. Resin flush solution and spent resin shall be transferred to the spent resin collection vessels as a slurry. Spent resin collection vessels shall be ventilated by the process vessel ventilation system.

Three of the four ion exchange columns shall operate in the loading cycle in series (i.e., a lead, a lag, and a polish column). The fourth column shall operate in parallel with the other columns and shall be eluted and regenerated, or have its spent-ion exchange media replaced. The column feeds shall be rotated so that:

The lead column is taken offline for elution/regeneration/media replacement
The lag column becomes the lead column
The polish column becomes the lag column
The regenerated column becomes the polish column

The polishing column shall be used in the loading cycle to ensure adequate removal of cesium.

The concentration of cesium in the treated LAW shall be monitored. Loading operation shall be switched to the next position when the cesium concentration in the effluent of the lead column reaches a predetermined breakthrough point, or if significant amounts of cesium are detected in the effluent of the lag column or in the effluent of the polishing column.

When the ion exchange column resin loses performance, the spent resin shall be slurried out of the column to the spent resin collection and dewatering system. A slurry of fresh resin shall then be added to the column as bed replacement.

Resin flush solution and spent resin shall be transferred to the spent resin collection vessels. Excess resin flush solution shall be purged to the waste feed evaporator. Excess transport liquid shall be collected in the spent resin collection and dewatering system for use as resin removal flush solution.

Spent resin collection vessels shall be ventilated by the process vessel ventilation system.

-Cesium Nitric Acid Recovery System (C5): The cesium nitric acid recovery system shall recover used nitric acid from the cesium ion exchange resin bed elution for reuse. Eluate composed of cesium-bearing nitric acid shall be fed to the nitric acid recovery evaporator operating under reduced pressure to lower the operating temperature. The nitric acid stream shall be recirculated from the evaporator to the steam-heated reboiler. The concentrated eluant in the evaporator shall be routed to a concentrate storage tank for blending into the HLW melter feed stream. The cesium nitric acid recovery system

shall be in standby mode when a cesium ion exchange column is not being eluted.

-Technetium Ion Exchange System (C5): The technetium ion exchange system shall remove technetium from the LAW feed stream with a series of four ion exchange columns which shall be rotated and finally eluted with water to remove the technetium. Resin flush solution and spent resin shall be transferred to the spent resin collection and dewatering system as a slurry. Spent resin collection vessels shall be ventilated by the process vessel ventilation system.

Three of the four ion exchange columns shall operate in the loading cycle in series (i.e., a lead, a lag, and a polish column). The fourth column shall operate in parallel with the other columns and shall be eluted and regenerated, or have its spent-ion exchange media replaced. The column feeds shall be rotated so that:

The lead column is taken offline for elution/regeneration/media replacement
The lag column becomes the lead column
The polish column becomes the lag column
The regenerated column becomes the polish column

The polishing column shall be used in the loading cycle to ensure adequate removal of technetium.

The concentration of technetium in the treated LAW shall be monitored. Loading operation shall be switched to the next position when the technetium concentration in the effluent of the lead column reaches a predetermined breakthrough point, or if significant amounts of technetium are detected in the effluent of the lag column or in the effluent of the polishing column.

When the ion exchange column resin loses performance, the spent resin shall be slurried out of the column to the spent resin collection and dewatering system. A slurry of fresh resin shall then be added to the column as bed replacement.

-Technetium Eluant Recovery System (C5): The technetium eluant recovery system shall recover water from eluate from elution of the technetium ion exchange resin beds. Eluant composed of technetium-bearing water shall be fed to the technetium recovery evaporator operating under reduced pressure to lower the operating temperature. The eluant stream shall be recirculated from the evaporator to the steam-heated reboiler. Vapors from the evaporator shall be recovered and collected in the recovered technetium eluant vessel and shall be reused. Concentrated technetium solution in the evaporator shall be combined with the cesium concentrate and shall be incorporated into the HLW feed stream for vitrification. The technetium eluant recovery system shall be in standby mode when no technetium column is being eluted. The major vessels of the technetium eluant recovery system shall be equipped with internal wash rings for decontamination of the system.

-Spent Resin Collection and Dewatering System (C5): The spent resin collection and dewatering system shall remove fully eluted spent resin from the ion exchange columns in the cesium or technetium ion exchange processes. Resin removal transport liquid shall be pumped from the spent resin collection system to the designated ion exchange column to fluidize the resin particles and carry the resin particles to the spent resin collection system. In the spent resin collection system, the resin shall be sampled and either sent back to an ion exchange column for further elution or sent forward to a disposable resin dewatering container.

Spent resin shall be transferred through process piping directly into a shielded disposal/transport

container located in a C5 area specifically designated for loading and dewatering the resin. After transfer into the container, the resin shall be dewatered, and the container shall be sealed to meet applicable transportation and disposal requirements. After verification of free release contamination levels, the containers shall be transferred via airlocks to the truck loading area. The dewatering area shall be classified as a C5 area during container filling but the area shall be classified as a C3 area during transfer of the vessels. A crane in the truck loading area shall be used to transfer the container from the cart to the transport vehicle.

-Treated LAW Evaporation System (C5; Condensate Tanks C3): The treated LAW evaporation system shall further concentrate the treated LAW feed from the technetium ion exchange system. This system shall also process purge liquid from the submerged bed scrubber (SBS) from LAW vitrification offgas control systems. The treated LAW evaporator shall be a forced-circulation unit operating under vacuum to reduce the process fluid temperature rise and maintain a process temperature of approximately 50 oC (122 oF). The treated LAW feed from the technetium ion exchange system shall be transferred to the treated LAW evaporation system. The SBS purge liquor from LAW vitrification shall be received and neutralized prior to evaporation.

The two feeds to the treated LAW evaporator shall be pumped continuously to the suction side of the recirculation pump, which shall transfer the waste through the reboiler and back into the separator vessel. The recirculating waste stream shall be prevented from boiling in the reboiler tubes by maintaining sufficient hydrostatic head to increase the boiling point above the temperature of the liquor in the reboiler.

Flash evaporation shall occur as the flow enters the separator vessel. The liquid shall continue to flash to equilibrium, and the vapor and liquid streams shall be separated. The liquid stream shall continue to circulate in the closed system, and the vapor stream shall pass into the evaporator offgas system. The concentrated waste stream shall be pumped continuously out of the evaporator system. The concentrate take-off shall be located on the suction line of the re-circulation pump. The concentrated waste stream shall be stored and processed through the LAW vitrification plant.

-Plant Wash and Disposal System (C5): The plant wash and disposal system shall receive, store, and transfer plant wash, drain effluent, and acidic or alkaline effluent from the pretreatment plant. Plant wash and drain effluents shall be collected and mixed with other effluents in the plant wash vessel prior to transfer. Effluent solutions shall be analyzed for pH and excess acidic effluent shall be neutralized and shall be recycled to the waste feed evaporation system.

High-activity and alkaline effluent shall be received, stored, and neutralized in the primary acidic/alkaline effluent vessel or the secondary acidic/alkaline/ effluent vessel prior to transfer. In both vessels, the acidic and alkaline effluents shall be mixed to neutralize the effluents. The mixture shall be analyzed and neutralized, if necessary. When the effluent meets the predetermined pH value, it shall be transferred to the waste feed evaporation system for recycling.

The alkaline effluent vessels shall primarily receive caustic scrubber purge from LAW vitrification and effluents from the technetium ion exchange system. The effluents are sampled and, if they meet acceptability requirements, they shall be sent to the radioactive liquid disposal system. If the effluent does not meet requirements, it shall be sent to the treated LAW evaporation system.

The C3 drain collection vessel shall receive floor drains and floor sumps effluent from C3 areas. These

effluents shall be transferred to the plant wash vessel for treatment.

The HLW effluent transfer vessel shall receive HLW acidic wastes from HLW vitrification line drains from HLW vitrification/pretreatment plant interface lines and laboratory drains. These effluents shall be transferred to the plant wash vessel to recover effluents back into the process system.

The ultimate overflow vessel shall receive overflows from vessels in the pretreatment plant and also line drains and flushes. The vessel operating level shall be maintained below a predetermined level to hold 30 minutes of overflow at the highest transfer rate within the plant

-Radioactive Liquid Waste Disposal System (C3): The radioactive waste disposal system shall receive, store, and transfer contaminated liquid effluents. The radioactive liquid waste disposal system shall receive low-activity and/or dangerous waste effluents.

This radioactive liquid waste disposal system shall receive primarily effluent from caustic scrubber purges from the LAW vitrification plant via the plant wash and disposal system, waste feed evaporator system, and the treated LAW evaporator system. Liquid effluents from this system shall be recycled or discharged to the LERF and the transferred to the ETF.

-Radioactive Solid Waste Handling System (C3): The radioactive solid waste handling system shall provide the following functions: lifting, holding, and transporting disposal containers; packaging disposal containers and preparing the containers for shipping; decontamination of waste and cleaning and remote monitoring of disposal containers; and temporary shielding and confinement barriers. This system shall handle failed process equipment: pumps, valves, filters, jumpers, and maintenance equipment.

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH.

   A minimum of one year prior to the receipt of waste material the licensee shall certify that the recalculated radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units are still appropriate or recalculate and resubmit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate.

   [WAC 246-247-110(10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

    Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.

    [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and shall identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures that shall be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing

around this unit to assure compliance. If directed by the department, the facility must make provision for such testing. [(WAC 246-247-075(9) and (10)]

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5), (WAC 246-247-080(5)).

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for

entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, valves, piping, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The total radioactivity feed to the WTP Pretreatment Facility from sources exterior to the WTP (that is, the sum of Waste Streams SVS103 and SVS116) shall not exceed 1.1E+08 curies/year. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

[WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP. [WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The USDOE shall provide manufacturer's specifications, including published removal efficiencies and installation requirements, to demonstrate to WDOH that the High Efficiency Mist Eliminator and Caustic Scrubber in this emission control unit are intended to operate at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. This information shall be provided to the WDOH at least 90 days prior to hot commissioning.

Where actual measurements are impossible, the USDOE shall provide to the WDOH for approval prior to hot startup sufficient information to demonstrate that the control equipment has been installed in accordance with manufacturers' specifications and that the manufacturers' specifications shall achieve

design removal efficiencies. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH.

[WAC 246-247-120]

41) If temperatures of air entering the HEPA filters exceed the manufacturer's recommendations for the filters, WDOH shall be notified and the cause of the temperature excursion shall be determined. HEPA filters shall be evaluated for the need to be replaced. [WAC 246-247-120]

42) Prior to cold commissioning, the USDOE shall provide documentation entering the WDOH for approval to demonstrate that humidity in the airstream to the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

43) The USDOE shall notify the WDOH before initiating use of any maintenance ventilation bypass line for the Pretreatment facility Caustic Scrubber. Prior to initiating use of any maintenance ventilation bypass line for the Pretreatment Caustic Scrubber, waste feed to the Pretreatment facility shall be halted. While the Pretreatment Caustic Scrubber maintenance bypass line is in use, offgas shall be treated with all other emission control system components for emission unit PT-S3, including the HEME and HEPA filtration. Prior to hot commissioning, appropriate descriptions of procedures to initiate this by-pass system shall be established, and shall be provided to WDOH for review and approval. [WAC 246-247-120]

44) Waste processing through the pretreatment facility shall cease during the loss of site electric power. The exhaust from the operation of purge air to control the hydrogen concentration in the process vessel head space shall be rerouted and treated through the emission control equipment for emission unit PT-S2: two stages of High-Efficiency Particulate Air (HEPA) filtration in series, and Exhaust Fans.

Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the inlet airstream to the operating HEPA filter bank during bypass operation due to power loss shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

45) The following monitoring requirements are based on emissions estimated presented in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002.

Emission unit PT-S3 shall be continuously monitored with analyses for gross alpha and gross b/g.

Radionuclides which contribute 10% of the unabated dose or greater, produce a unabated dose of 0.1mrem/yr, and radionuclides that contribute 25% of the abated dose or greater shall be continuously sampled, analyzed, and reported. This shall include at a minimum Am-241, Co-60, Cm-244, Cs-137, C-14, I-129, Np-237, Sm-151, Sr-90, Tc-99, U-234, Ru-106, and Cs-134.

Prior to hot commissioning, a procedure to manage down time or failure time of continuous sampling and monitoring equipment will be developed, and a description of this procedure shall be submitted to WDOH for review and approval. [WAC 246-247-040 (1); WAC 246-247-075]

46) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040 (1); WAC 246-247-075]

47) A new air sampling station shall be established at a distance of approximately 1500 meters in the ESE direction from WTP. This sampling station is hereinafter called the "New Station".

48) The following ambient air sampling stations shall be operated as a monitoring network, with all sampling, analysis, interpretation, and reporting to managed as a single entity: a) the New Station, b) Vit Plant North, c) B Pond, d) 200 ESE, e) N-977, f) N-985, g) N-158, h) N-984, i) N-498, j) N-499, k) West End Fir Road.

49) At all 11 of these stations the following air sampling regime shall be conducted: a) gross alpha/gross beta samples shall be collected on a bi-weekly basis (particulate air filters operated for two-week periods); b) particulate air samples shall be composited on a monthly basis and analyzed by gamma scan for the following radionuclides: 106Ru, 125Sb, 134Cs, 137Cs, 154Eu, and 241Am, plus any other radionuclides with positive activities greater than the MDA; and c) particulate air samples shall be composited on a quarterly basis and analyzed with appropriate radiochemical methods for 90Sr and 239-240Pu.

50) At the New Station, the Station at 200 ESE, and the Station at the West End of Fir Road, the following additional air samples shall be collected: a) tritium samples shall be obtained with silica gel or molecular sieve filters, collected approximately monthly, and the extracted moisture shall be analyzed by liquid scintillation; b) continuous air samples shall be collected on a monthly basis with appropriate sample media and analyzed with appropriate radiochemical techniques for 14C; and c) continuous air samples shall be collected with appropriate media and combined on a quarterly basis to be analyzed with appropriate radiochemical techniques for 129I.

51) Sampling and sample analysis regimes used for WTP ambient air monitoring shall meet or exceed the following minimum detectable concentrations over the above specified sampling periods:

ANALYSIS	Minimum Detectable Concentration
Gross Alpha:	0.001 pCi/m3
Gross Beta:	0.003 pCi/m3
Tritium:	3 pCi/m3
Strontium-90 :	0.0001 pCi/m3
Iodine-129:	0.00001 pCi/m3
Gamma Scan (137Cs) :	0.01 pCi/m3
Pu Isotopic :	0.000005 pCi/m3
Americium-241:	0.00005 pCi/m3

52) Preoperational monitoring shall be performed to obtain a baseline of all analytes prior to commencement of processing of radioactive waste at the WTP. A baseline dataset of 12 contiguous months of validated data shall be provided to WDOH for review and approval.

53) The operational status of the data management system for collecting, validating, and evaluating WTP ambient monitoring data shall be demonstrated to WDOH by providing in report form the baseline dataset of 12 contiguous months of validated data of all analytes for review and approval.

54) Validated gross beta sample results from all 10 stations shall be reported within 30 days of sample collection, and all data shall be promptly analyzed for trends.

55) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

56) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

57) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit PT-S3. [WAC 246-247-120]

58) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 512**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) PRETREATMENT PLANT

Emission Unit Name: PT-S4 **Emission Unit ID** 543

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Demister	3	Two in operation and one in standby.
	Injection Air	1	Operational.
	Moderate Efficiency Filter	1	One in operation and one in stand-by. Conditions air from C3 air inbleed prior to combining with Pulse Vent Exhaust stream of PT-S4 and prior to primary HEPA filtration.
	Heater	1	One in operation and one in stand-by. Conditions air from C3 air inbleed prior to combining with Pulse Vent Exhaust stream of PT-S4 and prior to primary HEPA filtration.
	HEPA	1	One in operation and one in stand-by. Conditions air from C3 air inbleed prior to combining with Pulse Vent Exhaust stream of PT-S4 and prior to primary HEPA filtration.
	HEPA	2	Two stages of HEPA filtration. A total of seven banks of primary HEPAs five in operation and two in standby. Each bank contains five filters. A total six banks of secondary HEPAs four in operation and two in standby. Each bank contains six filters.
	Exhaust Fan	3	Two in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Am-241, C-14, Co-60, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Pu-241, Sb-125, Sr-90, U-234, Ru-106, Cs-134.	Continuous

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the receipt of waste from the Double Shell Tank system for the separation and preparation of the Low-Activity Waste and High-Level Waste feeds for vitrification. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit PT-S4 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: demisters, an injection of conditioned C3 air delivered through a module comprised of a Moderate Efficiency Filter (MOD)/Heater/HEPA, two stages of High-Efficiency Particulate Air (HEPA) filtration in series, and Exhaust Fans.

The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

The inlet airstream temperature for each HEPA filter bank shall be measured by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The temperature differential shall be controlled to ensure Relative Humidity (RH) is within acceptable limits. The moisture content of the inlet airstream for each HEPA filter bank shall be measured by a capacitive moisture sensor that is specified to be tolerant of particulate contamination and most chemicals. The dewpoint of offgas air flow shall be measured and subsequently controlled by temperature to ensure that the air stream is above its dewpoint in order to prevent condensation in offgas treatment equipment such as HEPA filters. The various component selections for moisture sensor instruments shall be based on factors that include range, accuracy, offgas stream constituents, and radiation levels.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

[WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-040(5); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted. Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)

The approved activities are limited to:

Exhaust from the Reverse-Flow Diverters/Pulse Jet Mixers (RFD/PJMs) shall be vented through emission unit PT-S4. The RFD/PJMs shall be used within the pretreatment plant for metered transfer of liquids or slurries throughout the pretreatment process. The following is a description of the operation of an RFD:

Operation of the RFD is cyclical, following timed phases: suction phase, drive phase, and blowdown.

Suction Phase. In the suction phase, the secondary automatic valve is opened, admitting air to the suction jet pump. A second valve is then shut, and liquid is drawn from the supply tank through the RFD and into the charge vessel. The suction ejector is designed so that it cannot produce a vacuum capable of lifting liquid higher than the suction lift valve. The liquid reaches this "suction lift" height and stops, and then the first valve is shut.

Drive Phase. When the first valve is shut, the second valve is opened, admitting air to the drive nozzle. Air passes through the nozzle and pressurizes the charge vessel. Liquid is forced across the RFD and into the delivery pipe. The delivery pipe is then filled with liquid that flows into the delivery vessel.

Blowdown phase. When the charge vessel is nearly empty, the second valve is shut; no air is supplied to either jet pump. The compressed air in the charge vessel passes back through the paired jet pumps, down the vent pipe, and into the vessel vent system.

Shortly after blowdown begins, the pressure in the charge vessel falls below the delivery head, and the flow of liquid into the delivery vessel is halted. The liquid in the delivery vessel then falls back down the pipe, across the reverse flow diverter, and into the charge vessel. After a short time, the pressure in the charge vessel falls to zero (gauge). The cycle is now complete.

The exhausts for the PJV system originate from the operation of the RFDs and the PJM pulse tubes located below the liquid level in the process vessels. These fluidic devices use motive compressed air to lower and raise the level of liquid in the charge vessels located within the process vessel for the purpose of mixing via PJMs and fluid transfer via RFDs. Even though the total air flow from all the RFDs and PJMs is significant, only a small fraction of this air passes through the charge vessels, the remainder being the motive air for the suction jets used to draw suction on the charge vessels.

Compressed air supply to the jet pumps used for the fluidic mixing devices for the process vessels pushes the liquid out to the lower operating level in the charge vessel during the mixing drive cycle or the RFD drive phase. The gases from the charge vessel are exhausted during the suction cycle by another jet pump to the RFD/PJM exhaust header so that the operating level shall rise to the upper limit in the charge vessel. The combination of the suction and discharge cycles provides the required mixing in the process vessel.

Controls shall be provided for the compressed air supply to the RFD/PJMs to avoid a flow surge into the vapor space inside the process vessel, referred to as "overblow". The air lines in the air supply racks that vent the PJMs and RFD charge vessels have pressure sensors to control the air flow. These pressure sensors detect the significant difference in backpressure that occurs at the point when air instead of liquid flows through the PJM nozzle or RFD line. The pressure sensors then send a signal to close the drive air supply valves and alert the operator of the overblow situation. Once detected, the cycle shall be adjusted to avoid overblow on subsequent cycles.

The time that air blows into the vessel is a period of a few seconds. The quantity of air that discharges to the vessel during an overblow is small compared to the capacity of the vessel vent system and shall contribute no significant potential to emit.

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH.

   A minimum of one year prior to the receipt of waste material the licensee shall certify that the recalculated radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units are still appropriate or recalculate and resubmit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate.

   [WAC 246-247-110(10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040 (3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

    Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.

    [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and shall identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures that shall be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing. [(WAC 246-247-075(9) and (10)]

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5), (WAC 246-247-080(5)).

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the Washington State Department of Health Code Compliance Matrix for the Waste Treatment Plant Process Gas Treatment systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, valves, piping, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The total radioactivity feed to the WTP Pretreatment Facility from sources exterior to the WTP (that is, the sum of Waste Streams SVS103 and SVS116) shall not exceed 1.1E+08 curies/year. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually there-after. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

35) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity

(APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

36) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-·provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP. [WAC 246-247-120]

37) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The USDOE shall provide manufacturer's specifications, including published removal efficiencies and installation requirements, to demonstrate to WDOH that the demister in this emission control unit is intended to operate at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. This information shall be provided to the WDOH at least 90 days prior to hot commissioning.

Where actual measurements are impossible, the USDOE shall provide to the WDOH for approval prior to hot startup sufficient information to demonstrate that the control equipment has been installed in accordance with manufacturers' specifications and that the manufacturers' specifications shall achieve design removal efficiencies.

[WAC 246-247-120]

38) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH.

[WAC 246-247-120]

39) The USDOE shall prepare documentation which a) identifies the critical operating parameters for pulse jet mixers (PJMs) and reverse flow diverters (RFDs) used in pretreatment processes, and b) prescribes a program to determine the acceptable operating ranges for these parameters during cold commissioning. Prior to cold commissioning the USDOE shall provide documentation describing the procedure(s) and an adequate list of indicator parameters as well as appropriate indicator device(s) for each parameter to the WDOH for review and approval. The USDOE shall determine acceptable operating ranges for these parameters and shall develop operating procedures to maintain the PJMs and RFDs within these ranges. The USDOE shall present these ranges and documentation describing the maintenance and operating procedures for approval prior to accepting radioactive material into the WTP. [WAC 246-247-120]

40) If temperatures of air entering the HEPA filters exceed the manufacturer's recommendations for the filters, WDOH shall be notified and the cause of the temperature excursion shall be determined. HEPA filters shall be evaluated for the need to be replaced. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) During the loss of site electric power, waste processing through the pretreatment facility shall cease with the exception of ITS (Important to Safety) mixing operation for selected process vessels. The vent path in the PJV system shall remain open so that the PJM exhausts from these selected process vessels will be treated through the following emission controls for emission unit PT-S4: demisters, , two stages of High-Efficiency Particulate Air (HEPA) filtration in series, without Exhaust Fans. During loss of power, the operation of the Pulse Jet Mixers (PJMs) within the ITS vessel shall provide the pressure for exhaust flow into the control systems without motive power by the exhaust fans.

    Prior to cold commissioning, the USDOE shall demonstrate in writing to the WDOH for approval that the operation of the Pulse Jet Mixers (PJMs) within the ITS vessel is adequate to provide the pressure for exhaust flow into the control systems without motive power by the exhaust fans. [WAC 246-247-120]

43) Interlock and preventive devices shall be in place to prevent backflow from PT-S4 to PT-S1 through the C3 air in-bleed system upon loss of power.

44) The following monitoring requirements are based on emissions estimated presented in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. Emission unit PT-S4 shall be continuously monitored with analyses for gross alpha and gross b/g. Radionuclides which contribute 10% of the unabated dose or greater, produce a unabated dose of 0.1mrem/yr, and radionuclides that contribute 25% of the abated dose or greater shall be continuously sampled, analyzed, and reported. This shall include at a minimum Am-241, C-14, Co-60, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Pu-241, Sb-125, Sr-90, U-234, Ru-106, and Cs-134.

    Prior to hot commissioning, a procedure to manage down time or failure time of continuous sampling and monitoring equipment will be developed, and a description of this procedure shall be submitted to WDOH for review and approval. [WAC 246-247-040(1); WAC 246-247-075]

45) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040(1); WAC 246-247-075]

46) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

47) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

48) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit PT-S4. [WAC 246-247-120]

49) WTP shall identify maintenance activities that will require localized controls for particulates. Design

details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

50) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

51) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

    The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

    [WAC 246-247-120]

52) The Moderate Efficiency Filter (MOD), heater, and HEPA used to condition air from C3 air inbleed prior to combining with Pulse Vent Exhaust system of PT-S4 shall be demonstrated on a periodic basis to be installed and operating in accordance with facility design specifications.

Approval Number: Not Assigned **NOC ID: 512**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) PRETREATMENT PLANT

Emission Unit Name: PT-C2 **Emission Unit ID** 544

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	One stage of HEPA filtration. A total of ten banks of primary HEPAs eight in operation and two in standby. Each bank contains six filters.
	Exhaust Fan	2	Two in operation.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Gross Alpha and Gross Beta/Gamma	Shall be determined prior to cold commissioning
Sampling Requirements:	Record Sampling		

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the receipt of waste from the Double Shell Tank system for the separation and preparation of the Low-Activity Waste and High-Level Waste feeds for vitrification. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit PT-C2 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a single stage of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

Space temperatures from which C2 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The C2V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

[WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-040(5); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted. Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)

The approved activities are limited to:

The exhaust from the C2 ventilation system shall be vented through emission unit PT-C2. A portion of the air supplied to the C2 areas shall be cascaded into adjacent C3 areas, and the rest shall be exhausted directly by the C2 exhaust system. The C2 exhaust system fans shall be interlocked with the C5 exhaust fans and shall shut down in the event of a failure of the C5 exhaust system to prevent reversal.

The C2 ventilation system shall serve the non-process operating areas, such as hallways, instrument control and instrumentation room, and electrical and mechanical equipment rooms. Access from C2

areas into a C3 shall be via a C2/C3 sub-change room.

Activities ventilated by emission unit PT-C2 with potential to emit radioactive emissions shall be limited to transport of bagged failed manipulator for repair within the C3 workshop; transport of containerized failed equipment for repair within the C3 workshop; transport of containerized failed equipment for storage at the balance-of-facilities area(BOF); transport of containerized miscellaneous wastes for storage at the BOF; transport of personal protection equipment; transport of process samples via autosampler; filter changeout, aerosol testing, and transport of spent filters; and exhaust fan maintenance.

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH.

   A minimum of one year prior to the receipt of waste material the licensee shall certify that the recalculated radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units are still appropriate or recalculate and resubmit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate.

   [WAC 246-247-110 (10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring,

different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and shall identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures that shall be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing. [(WAC 246-247-075(9) and (10)]

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5), (WAC 246-247-080(5)).

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002 and WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003. [WAC 246-247-120]

    b) Emission unit components design, construction, testing, and operation different from those

identified in the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002 and WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002 and WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The total radioactivity feed to the WTP Pretreatment Facility from sources exterior to the WTP (that is, the sum of Waste Streams SVS103 and SVS116) shall not exceed 1.1E+08 curies/year. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

[WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration

damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP.

[WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation. Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Surface concentrations of smearable contamination for surface areas within C2 ventilation areas shall not exceed 1,000 dpm/100 cm2 for beta/gamma emitters or 20 dpm/100 cm2 for alpha emitters. [WAC 246-247-110 (10, 11, 12, 13)]

43) The USDOE shall perform radiation surveys on at least a quarterly basis of the smearable surface radioactive contamination of exposed surface areas ventilated by emission unit PT-C2. The USDOE shall use the data from these surveys to demonstrate that the annual average surface concentration of beta/gamma emitters does not exceed 1000 dpm/100 cm2 over a surface area of 4960 m2, and that the annual average surface concentration of alpha emitters does not exceed 20 dpm/100 cm2 over a surface area of 4960 m2. [WAC 246-247-110(10,11,12,13)]

44) If electrical power to operate exhaust fans for this emission unit fails, normal operations within this emission unit with the potential to produce particulates shall cease until power is restored. [WAC 246-247-120]

45) Differential pressures shall be monitored between C2 and C3 areas to ensure air flow is from the C2 to

C3 areas. [WAC 246-247-120]

46) Interlocks shall be in place to prevent operation of the PT-C2 emission unit upon loss of power to the C3 ventilation. [WAC 246-247-120]

47) The following monitoring requirements are based on emissions estimated presented in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. For emission unit PT-C2, periodic confirmatory emissions sampling for particulates shall be performed, with analyses for gross alpha and gross b/g. [WAC 246-247-040 (1); WAC 246-247-075]

48) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040 (1); WAC 246-247-075]

49) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

50) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

51) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit PT-C2. [WAC 246-247-120]

52) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 512**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) PRETREATMENT PLANT

Emission Unit Name: PT-S1 **Emission Unit ID** 545

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	One stage of HEPA filtration. A total of eight banks of primary HEPAs six in operation and two in standby. Each bank contains six filters.
	Exhaust Fan	3	Two in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Gross Alpha and Gross Beta/Gamma	Shall be determined prior to cold commissioning
Sampling Requirements:	Record Sampling		

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.
3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
   the receipt of waste from the Double Shell Tank system for the separation and preparation of the Low-Activity Waste and High-Level Waste feeds for vitrification. See process descriptions listed below for the individual emission units.
4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit PT-S1 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a single stage of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

Space temperatures from which C3 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The C3V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

[WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-040(5); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted. Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)

The approved activities are limited to:

The exhaust from the C3 ventilation system shall be vented through emission unit PT-S1. The C3 ventilation system shall ventilate the filter plant rooms, exhaust fan rooms, bulge rooms, workshops, maintenance areas and monitoring areas. Emissions from these areas shall be vented through emission unit PT-S1 or cascaded into C5 areas and subsequently vented through emission unit PT-S2.

Access into a C3 area shall be via a C2/C3 sub-change room. For C3 areas (the filter plant rooms, exhaust fan rooms, bulge rooms, workshops, maintenance areas and monitoring areas) air shall be

cascaded from C2 areas, through transfer grilles in the C2/C3 sub-change room, and into the C3 areas. When a sufficient amount of air cannot be cascaded into a C3 area, a dedicated C2 supply shall be provided with a damper on the C2 supply duct, which shall close in the event of a loss of C3 extract.

C3 designated areas such as the bulge rooms and maintenance areas with greater potential for contamination shall be cascaded directly into neighboring C5 areas via filtered inbleeds. The C3 exhaust system fans are interlocked with the C5 exhaust fans and shall shut down in the event of a failure of the C5 exhaust system.

Activities with potential to emit radioactive emissions shall be limited to pump maintenance, valve maintenance, condenser maintenance, sampler maintenance (shall be decontaminated prior to transfer to C3 workshop), demister/evaporator pad change-out, aerosol testing, exhaust fan maintenance, and filter change-out.

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH.

   A minimum of one year prior to the receipt of waste material the licensee shall certify that the recalculated radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units are still appropriate or recalculate and resubmit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate.

   [WAC 246-247-110(10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design

plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.

[WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and shall identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures that shall be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing. [(WAC 246-247-075(9) and (10)]

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this

chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5), (WAC 246-247-080(5)).

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH.[40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for PTF HVAC Systems,24590-PTF-RPT-ENG-02-002, Rev A, dated November 15, 2002 and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in the WDOH Code Compliance Matrix for PTF HVAC Systems, 24590-PTF-RPT-ENG-02-002, Rev A, dated November 15, 2002 and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003, are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002 and WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The total radioactivity feed to the WTP Pretreatment Facility from sources exterior to the WTP (that is, the sum of Waste Streams SVS103 and SVS116) shall not exceed 1.1E+08 curies/year. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

[WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080(7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP.

[WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH.

[WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Surface concentrations of smearable contamination for surface areas within C3 ventilation areas shall not exceed 100,000 dpm/100 cm2 for beta/gamma emitters or 1000 dpm/100 cm2 for alpha emitters. [WAC 246-247-110(10,11,12,13)]

43) The USDOE shall perform radiation surveys on at least a quarterly basis of the smearable surface

radioactive contamination of exposed surface areas ventilated by emission unit PT-S1. The USDOE shall use the data from these surveys to demonstrate that the annual average surface concentration of beta/gamma emitters does not exceed 100,000 dpm/100 cm2 over a surface area of 700 m2, and that the annual average surface concentration of alpha emitters does not exceed 1000 dpm/100 cm2 over a surface area of 700 m2. [WAC 246-247-110(10,11,12,13)]

44) If electrical power to operate exhaust fans for this emission unit fails, normal operations within this emission unit with the potential to produce particulates shall cease until power is restored. [WAC 246-247-120]

45) Differential pressures shall be monitored between C2 and C3 areas to ensure air flow is from the C2 to C3 areas.

Differential pressures shall be monitored between C3 and C5 areas to ensure air flow is from the C3 to C5 areas.

[WAC 246-247-120]

46) Interlocks shall be in place to prevent operation of the PT-S1 emission unit upon loss of power to the C5 ventilation.

Interlocks shall be in place to prevent operation of the PT-C2 emission unit upon loss of power to the C3 ventilation.

[WAC 246-247-120]

47) Seal leakage for all two-position Dampers serving between C3 and C5 systems shall be leakage Class 1 per ASME AG-1-1997 with ASME AG-1a 2000 Addenda, Article DA-4131 and mandatory Appendix DA-I. [WAC 246-247-120]

48) The following monitoring requirements are based on emissions estimated presented in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. For emission unit PT-S1, periodic confirmatory emissions sampling for particulates shall be performed, with analyses for gross alpha and gross b/g. [WAC 246-247-040 (1); WAC 246-247-075]

49) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040(1); WAC 246-247-075]

50) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

51) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

52) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit PT-S1. [WAC 246-247-120]

53) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC

246-247-120]

Approval Number: Not Assigned **NOC ID: 512**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) PRETREATMENT PLANT

Emission Unit Name: PT-S2 **Emission Unit ID** 546

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	Two stages of HEPA filtration. A total of ten banks of primary HEPAs eight in operation and two in standby. Each bank contains five filters. A total eight banks of secondary HEPAs six in operation and two in standby. Each bank contains six filters.
	Exhaust Fan	3	Two in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Radionuclides which contribute 10% fo the unabated dose or greater, produce an unabated dose of 0.1 merm/yr, and radionuclides that contribute 25% of the abated dose or greater. This shall include Cs-137, Am-241, and Sr-90.	Continuous

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the receipt of waste from the Double Shell Tank system for the separation and preparation of the Low-Activity Waste and High-Level Waste feeds for vitrification. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit PT-S2 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: two stages of High-Efficiency Particulate Air (HEPA) filtration in series, and Exhaust Fans.

The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

Space temperatures from which C5 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The C5V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

[WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-040(5); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted. Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040(3)]

The approved activities are limited to:

-Pretreatment Plant Hot Cell: The pretreatment hot cell shall be located in the central portion of the pretreatment plant.

Process equipment shall be remotely handled in case of failure and shall be removed by an overhead crane or powered manipulator. The hot cell shall also contain a repair area for cranes and powered manipulators. Failed equipment shall be placed in containers and transported through a series of airlock and shield doors to a truck loading area on the outside of the building.

The hot cell shall contain the process equipment: pumps, valves, jumpers, and filters. Activities performed in the hot cell shall include removal and staging of failed, remote-handled process equipment prior to decontamination, and repair and/or packaging waste for disposal

-Pretreatment Plant Filter Cave Operations: The filter cave shall contain all HEPA filters associated with the C5 ventilation and high efficiency mist eliminators (HEME) filters. The cave shall be located in the southeast corner of the pretreatment building at the 56-foot level.

An overhead crane or power manipulator shall be used to change out the HEPA and HEME filters, transport in-cave equipment, and handle tooling for maintenance or operational tasks.

The Pretreatment Plant Filter Cave shall incorporate a dedicated hands-on equipment maintenance area at the east end of the filter cave. This area shall be separated from the filter cave by equipment access shield doors. The area shall contain access platforms, decontamination equipment, fixtures and tooling to perform maintenance activities, and shall serve as an access route for importing clean filters into the cave. The overhead crane or power manipulator shall be parked in the maintenance area when not being used in the filter cave.

Spent filters and HEME elements shall be size-reduced into a disposal container prior to being exported from the cave. The disposal container shall be lowered through an access hatch in the floor of the cave and into a 55-gallon drum. The drum shall be lidded, swabbed, and assayed prior to being exported from the building.

-Pretreatment In-Cell Maintenance and Decontamination: Remote-controlled maintenance activities shall be performed in the in-cell maintenance and decontamination area. The activities performed within this area shall be limited to equipment decontamination, equipment disassembly and size reduction. Failed equipment may be placed into a container for disposal or transported to the C3 workshop for repair.

-Pretreatment Plant C3 Workshop: Hands-on equipment maintenance performed in the pretreatment plant C3 workshop shall be limited to decontamination, size reduction, and packaging of spent equipment. The area shall be limited to an interim storage area, lag storage area, manipulator decontamination and repair, waste packaging, tool cribs and sub-change rooms. The area shall include hatches to import or export spent equipment. Equipment may be moved by an overhead crane; a crane may also be used for removal or placement of the spent equipment in waste containers. The maintenance activities are limited to pump maintenance, valve maintenance, sampler handling and maintenance, and exhaust fan maintenance.

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH.

   A minimum of one year prior to the receipt of waste material the licensee shall certify that the recalculated radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units are still appropriate or recalculate and resubmit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate.

   [WAC 246-247-110(10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

    Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.

    [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and shall identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures that shall be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing. [(WAC 246-247-075(9) and (10)]

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5), (WAC 246-247-080(5)).

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002, are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to

WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the WDOH Code Compliance Matrix for PTF HVAC System, 24590-WTP-RPT-ENG-02-002, Rev. A, dated November 15, 2002 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The total radioactivity feed to the WTP Pretreatment Facility from sources exterior to the WTP (that is, the sum of Waste Streams SVS103 and SVS116) shall not exceed 1.1E+08 curies/year. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

    The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup. [WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080(7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

    -provide critical operating parameters;
    -develop acceptable operating ranges;
    -develop operating procedures to monitor and maintain these parameters;
    -provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP.

[WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation entering the WDOH for approval to demonstrate that humidity in the airstream to the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Alternate power supplied by the generators shall be available for the exhaust fans upon loss of normal facility electrical power. [WAC 246-247-120]

43) Differential pressures shall be monitored between C3 and C5 areas to ensure air flow is from the C3 to C5 areas. [WAC 246-247-120]

44) Interlocks shall be in place to prevent operation of the PT-S1 emission unit upon loss of power to the C5 ventilation. [WAC 246-247-120]

45) Seal leakage for all two-position Dampers serving between C3 and C5 systems shall be leakage Class 1 per ASME AG-1-1997 with ASME AG-1a 2000 Addenda, Article DA-4131 and mandatory Appendix DA-I. [WAC 246-247-120]

46) The following monitoring requirements are based on emissions estimated presented in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. Emission unit PT-S2 shall be continuously monitored with analyses for gross alpha and gross b/g.Radionuclides which contribute 10% of the unabated dose or greater, produce a unabated dose of 0.1mrem/yr, and radionuclides that contribute 25% of the abated dose or greater shall be continuously sampled, analyzed, and reported. This shall include at a minimum Am-241, Cs-137, and Sr-90.

Prior to hot commissioning, a procedure to manage down time or failure time of continuous sampling and monitoring equipment will be developed, and a description of this procedure shall be submitted to WDOH for review and approval.

[WAC 246-247-040 (1); WAC 246-247-075]

47) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040 (1); WAC 246-247-075]

48) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

49) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

50) Volume reduction equipment ("HEPA Compactors") shall not be operated within areas ventilated by emission unit PT-S2 until a demonstration, showing the current emission estimate from this emission unit bounds the emissions from the operation of the HEPA compactors, is presented to WDOH for review and approval. [WAC 246-247-120]

51) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]